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AUTHOR Bates, Gary W.
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ABSTRACT

A study compared the effects of two instructional strategies on ninth grade students' reading comprehension, retention, and attitude. Students in 15 ninth-grade classes were randomly assigned to one of three treatments: summary writing (SW), writing short answers to questions (QA), and rereading (RR), (control). The dependent measures were good and poor readers' scores on comprehension and retention tests, and attitude inventories for two experimental stories. The results showed that there was (1) no significant difference between the effects of SW and QA for good or poor readers' comprehension, retention, and attitudes; (2) no significant difference between the effects of QA and RR on good or poor readers' retention and attitudes, and that RR was significantly more facilitative than QA for both good and poor readers' comprehension; (3) no significant difference between SW and RR on good readers' comprehension, retention, and attitudes, and poor readers' comprehension and retention; and (4) that RR produced significantly more positive attitudes for poor readers than did SW. (Author/HTH)

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THE COMPARATIVE EFFECTS OF TWO INSTRUCTIONAL STRATEGIES ON NINTH GRADERS' COMPREHENSION, RETENTION, AND ATTITUDES

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by

Gary W. Bates, Ph.D.
College of Education
Ohio University
Athens, Ohio 45701

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by
Gary W. Bates, Ph.D.
College of Education
Ohio University
Athens, Ohio 45701

ABSTRACT

Students in fifteen ninth-grade classes were randomly assigned to one of three treatments: summary writing (SW), question answering (QA), and rereading (RR) (control). The dependent measures were good and poor readers' scores on comprehension and retention tests and attitude inventories on two experimental stories. There was no significant difference between the effects of SW and QA for good or poor readers' comprehension, retention, and attitudes. There was no significant difference between the effects of QA and RR on good or poor readers' retention and attitudes. RR was significantly more facilitative than QA for both good and poor readers' comprehension. There was no significant difference between SW and RR on good readers' comprehension, retention, and attitudes and poor readers' comprehension and retention. RR produced significantly more positive attitudes for poor readers than did SW.

Students' inadequate comprehension of written materials has been a continuous problem. In an early study of mistakes in paragraph reading Thorndike (1917) summarized his findings by stating:

> It appears likely, therefore, that many children fail in certain features of these (school) subjects not because they have understood and remembered the facts and principles but have been unable to organize and use them; or because they have understood them but have been unable to remember them; *but because they never understood them* (p. 331, emphasis added).

Students still have difficulty with the comprehension of written materials; and basic goals in most high school English classes still include the development of reading comprehension, the retention of attained knowledge, and the development of a positive attitude toward the content of attained and retained knowledge.

The strategies employed in this study, summarizing and question answering are student-employed strategies to improve comprehension and retention of written discourse.

PURPOSE

This study was designed to discover whether writing paragraph summaries of short stories or writing short answers to questions about the short stories would or would not increase students' comprehension of these stories, both for short and long term retention and whether the association of a writing task with the stories would or would not adversely affect students' attitudes toward the stories.

The effects of summary writing and question answering were compared with each other and with a control condition which involved rereading as a post-reading

instructional activity.

RATIONALE AND EXPECTED OUTCOMES

Summary Writing

Recent theorists (Rumelhart, 1975, 1977; Kintsch, 1974, 1976, 1977; van Dijk, 1977; and van Dijk and Kintsch, 1978) have expanded on Bartlett's (1932) early work involving memory for stories. They have suggested that stories have an underlying structure which can be described in terms of a generalized organizational structure. People learn this organizational pattern or "story schema" and expect a story to follow it. The schema of "story," therefore, reflects people's concepts of how a typical story is organized.

People use the schema of "story" to comprehend stories as they read them and later to reconstruct information from the stories as they try to recall them. In other words, people anticipate a general pattern in a story; they look for it and find it; and later, they use this pattern to help them remember the story.

According to Kintsch (1974, 1976) readers, in order to understand narratives, must have available as part of their general knowledge of the world a conventional narrative schema. Based on this schema, a reader expects a story to consist of an hierarchically ordered sequence of episodes, at least one major character, a setting, some type of complication, and a resolution.

Kintsch hypothesized that comprehension of a story involves filling in the slots of a schema (1976). This schema is then used to organize the text bases. This organization involves the construction of a macrostructure.

Van Dijk (1977) explained how macrostructures are formed. He proposed that macro-rules transform proposition and sequences of propositions from the text bases into another, more general level of description. These abstracted

propositions are macro-propositions (Kintsch, 1977) which form the "gist" of the story and are the basis of the summaries readers make of a story.

Kintsch (1977), relying on van Dijk's (1977) description of a narrative super-structure, defined a story as, "a sequence of episodes, each episode consisting of an exposition, a complication, and a resolution" (Kintsch, 1977, p. 38).

Using the three categories (exposition, complication, and resolution) proposed as essential parts of episodes, Kintsch and his colleagues conducted a series of experiments requiring subjects to sort paragraphs of stories into categories. The agreement between the theory and the structure obtained from the sorting data was deemed excellent (Kintsch, 1977).

Based upon the theory of processing and structure of stories as hypothesized by Kintsch (1974, 1976, 1977), van Dijk (1977), and van Dijk and Kintsch (1978), it was hypothesized for this study that training students to write summaries of short stories would have a facilitating effect on the comprehension and retention of those stories. The act of writing summaries of short stories would involve the students in analyzing the underlying structure of the stories in order to determine the macro-propositions that correspond to the categories of exposition, complication, and resolution for the various episodes in any given story. Thus, when the students attempt to recall the story at a later time, they should be able to call up the organizational structure and fill in the episode slots in the schema better than they would if they had not summarized the story.

Question Answering

Writing answers to questions about a story after reading it was chosen as a second treatment condition because of its ecological validity. That is,

English teachers have long used this activity as a strategy to develop students' comprehension and retention of prose material.

Numerous studies have been conducted to investigate the effects of placement of questions on comprehension. Frase (1967) found that postquestions (questions interspersed within the text after the relevant material) were the optimal procedure for both specific retention (items specifically asked by the interspersed questions) and incidental retention (items not specifically asked by the interspersed questions).

In addition, Frase found that there was a gradual improvement in scores on incidental questions when the passages were longer.

Anderson and Biddle (1975), concluded that questions can have a significant positive effect upon learning even when they are "batched" after lengthy passages rather than interspersed within the passage after the relevant material.

Felker and Dapra (1975) found that comprehension questions (new instances of concepts, not verbatim questions) when placed after the material had a facilitative effect on learning only when the subjects had to formulate answers and apply and combine concepts and rules.

Rickards (1979) criticized the research on adjunct questions because presentation of the questions spaced within the text requires that the text material itself be divided into topically discrete paragraphs. Such a condition is achieved by contriving the text material, but is unlikely to exist in natural text. This rather artificial arrangement of text passages and questions for research purposes restricts the generalizability of the results to natural text material encountered by students daily in school.

Based upon the findings by Frase (1967) that interspersed postquestions facilitate the learning of both specific and general information and upon the

Anderson and Biddle (1975) conclusion that postquestions, even when "batched" after whole passages, facilitate learning and upon the Felker and Dapra (1975) results that suggest that comprehension questions which require the formulation of answers have a facilitative effect upon learning, it was hypothesized for this study that training students to write answers to questions about short stories would increase their comprehension and retention of those stories. The act of writing answers to questions about short stories would involve the students in analyzing the stories. Therefore, when the students are required to recall the story at a later time, they should be able to remember more about the story than they would if they had not written answers to questions about the story.

Attitudes

It was further hypothesized that the association of writing tasks with the short stories would not adversely affect students' attitudes toward the stories. Clearly, this is an important consideration for English teachers because it would not be prudent to advance cognitive development at the expense of affective development.

In order to determine whether students' attitudes toward the short stories were adversely affected by the strategies for cognitive development, students' attitudes were assessed after they had completed their post-reading instructional activity.

METHOD

Subjects

Fifteen heterogeneously grouped ninth-grade English classrooms from two

midwestern high schools participated in the study. All students (N=362) in all participating classrooms were administered the comprehension subtest of the Stanford Diagnostic Reading Test: Blue Level, Form A (Karlsen, Madden, & Gardner, 1977).

Students who scored in stanines seven, six, and the upper half of stanine five were considered good readers for this study. Students who scored in stanines three, four, and the lower half of stanine five were considered poor readers.

One hundred and ninety-three students were identified as good readers based upon the above criterion. Sixty-nine were identified as poor readers.

Students were randomly assigned within classrooms to one of the three experimental conditions. The following distribution resulted: summary writing condition N=113; question answering condition N=116; rereading (control) condition N=133. Broken down into good and poor readers, the following distributions occurred: good readers, summary writing condition N=63; poor readers, summary writing condition N=63; good readers, question answering condition N=64; poor readers, question answering condition N=21; good readers, rereading (control) condition N=66; poor readers, rereading (control) condition N=30. The number of subjects present for the study varied from day to day; therefore, the actual cell sizes vary.

Text Material

The short stories used in the study were selected from textbooks designed for use with average ninth-grade English classes. The stories were all approximately 3,000 words long.

Instruments

The comprehension and retention tests were two different short-answer type tests which required the subjects to write answers to fifteen questions. Questions were all either textually explicit (the answer was directly stated in the story) or textually implicit (the answer was not directly stated in the story, but there was sufficient evidence in the story to make a reasonable inference) (Pearson & Johnson, 1978). All items on the retention tests were different from the items on the comprehension tests and no items asked for the same information asked by editor-provided questions used in the question answering treatment.

The attitude inventory was a modified version of one developed by Smith (1967). It consists of six items, three positive and three negative. The items were arranged in a Likert format with response categories ranging from "Strongly Agree" to "Strongly Disagree."

Design

The study was conducted using a two by three factoral design with two levels of ability (good and poor) and three levels of treatment (summary writing, question answering, and rereading).

Three measures were obtained for each story. Therefore, there were six measures per subject which were analyzed separately and also combined to yield three total measures: comprehension test mean, retention test mean, and attitude inventory mean.

Procedures

All training and test materials used in the study were contained in packets for the three treatment conditions and were administered simultaneously within

each classroom. All packets contained a set of step-by-step instructions. The final step in each packet directed the subject to place all the materials back into the packet and to hand it in.

Day 1

On day one, subjects in all treatments received training appropriate to their treatment condition.

Summary Writing Training: Story "A" was presented to subjects in regular typed form. Subjects were directed to read the story. Story "A" was then presented a second time with key propositions (expositions, complications, resolutions) underlined. Subjects were directed to read the parts of the story which were underlined. Next in the packet was a sample summary of story "A" written from the underlined parts. Subjects were directed to read the summary.

Story "B" was then presented in regular typed form. Subjects were directed to read the story and mark what they thought were the important parts of the story.

Next in the packet was a page on which to write a summary. Subjects were directed to write a summary of the story from the important parts they had marked. Following the page for the written summary was a list of the key propositions of the story. Subjects were directed to read the list and compare it to the parts of the story they had marked.

The final page of the packet was a sample summary of story "B" written from the list of key propositions. Subjects were directed to read the summary and compare it to the summary they wrote.

Question Answering Training: Story "A" was presented to subjects in regular typed form. Subjects were directed to read the story. Following the story were questions about the story and subjects were directed to read them.

Story "A" was then presented a second time with sections of the text bracketed and numbered in the margin where the answers to the questions were either explicitly or implicitly stated. Subjects were directed to read the bracketed parts of the story.

Next in the packet were sample answers to the questions about the story. Subjects were directed to read the sample answers.

Story "B" was then presented in regular typed form. Subjects were directed to read the story. Questions about the story followed it and subjects were directed to write short answers for each of the questions.

The final page of the packet was a list of sample answers to the questions about story "B." Subjects were directed to read the sample answers and compare them to the answers they wrote.

The questions and sample answers used in this training were investigator-modified versions of the questions and sample answers provided by the editors of the textbooks from which the stories were selected. These questions were used because a traditional practice of English teachers is to have students answer the editor-provided questions as a way to improve and test comprehension.

Rereading (Control) Training: A palcebo training was needed for the rereading (control) condition to balance the amount of time spent with the stories across treatment conditions.

Story "A" was presented to the subjects in regular typed form. Subjects were directed to read the story and then to think about it for a few minutes. Subjects were then directed to reread the story. The investigator and the classroom teachers observed subjects to ensure that they were rereading the story as directed.

Story "B" was then presented in regular typed form. Subjects were

similarly directed to read the story, think about it for a few minutes, and then to reread it.

Days 2 and 3

Two test stories were used. In order to control for possible story-order effects, the classrooms of two of the participating teachers received story one on day two and story two on day three. The other two teachers' classrooms received the stories in the reverse order. Therefore, eight classrooms received story one first and seven received story two first.

Subjects in all treatments were allowed the same amount of time to complete the materials: fifteen minutes to read the story, twenty minutes to apply the treatment condition, three minutes to complete the attitude inventory, and ten minutes to complete the comprehension test. Subjects in all treatments were directed to return the materials to the packets as they finished each step so that when they answered the questions on the comprehension test they were doing so from what they remembered of the story, not from what they could locate by referring back to the story. The investigator and the classroom teachers observed to ensure that these directions were followed.

Summary Writing Treatment: Subjects were presented the story in regular typed form. They were directed to read the story and then to write a summary of the story on the page provided in the packet. Subjects were directed to place the story and their written summary in the packet, answer the items on the attitude inventory and return it to the packet, and then to write a short answer to each of the questions on the comprehension test.

Question Answering Treatment: Subjects were presented the story in regular typed form. They were directed to read the story. Following the story in the packet were questions about the story. Subjects were directed to read the

questions and then to write a short answer to each question in the space provided. Subjects were then directed to place the story and the questions and their written answers into the packet, answer the items on the attitude inventory and return it to the packet, and then to write a short answer to each of the questions on the comprehension test.

Rereading (Control) Treatment: Subjects were presented the story in regular typed form. They were directed to read the story and then to think about it for a few minutes and then to reread the story. Again, the investigator and the classroom teachers observed to ensure that these directions were followed. Subjects were then directed to place the story back in the packet, answer the items on the attitude inventory, return it to the packet, and then to write a short answer to each of the questions on the comprehension test.

Days 4 and 5

On day four, one week after the comprehension test was taken for experimental story one, subjects were administered the retention test for that story. Subjects were directed to write a short answer to each question on the test. Subjects were allowed ten minutes to complete the retention test.

On day five, one week after the comprehension test was taken for experimental story two, subjects were administered the retention test for it. Procedures were the same as for day four.

ANALYSIS OF THE DATA AND RESULTS

After the experiment, the overall internal consistency reliability for each of the tests and for both of the attitude inventories were calculated using the SPSS computer program (Hull & Nie, 1979) based upon the data obtained during the experiment.

Subkoviak and Levin (1977) have pointed out that treatment differences can

confound an instrument's reliability. In order to correct this overestimate of reliability, they suggest that a pooled within-groups coefficient be used.

Pooled estimates of each test and each attitude inventory were computed following the equation suggested by Subkoviak and Levin (1977).

According to this formula, the pooled estimate of reliability was .7582 for the comprehension test for experimental story one, .6920 for the retention test, and .9245 for the attitude inventory. For experimental story two, the pooled estimate of reliability for the comprehension test was .7099, for the retention test .6793, and for the attitude inventory .9472.

Eighteen planned comparisons were devised. Dunn's multiple comparison procedure (see Kirk, 1968) was used for making all planned comparisons among means.

Rereading was significantly more facilitative than question answering for both good and poor readers' comprehension ($p < .05$). In addition, poor readers who reread the stories had significantly more positive attitudes toward the stories than poor readers who wrote summaries of the stories ($p < .05$).

There was no significant difference between the effects of summary writing and question answering on good or poor readers' comprehension, retention, and attitudes. Further, there was no significant difference between the effects of question answering and rereading on good or poor readers' retention and attitudes. There was no significant difference between summary writing and rereading on good readers' comprehension, retention, and attitudes or on poor readers' comprehension and retention.

A post hoc analysis was performed on new groups which were formed by combining ability on post-instructional activity and treatment. Four groups were constructed: high ability summary writers, low ability summary writers, high

ability question answerers, and low ability question answerers. Those classified as high ability summary writers were also all good readers.

All pairwise comparisons among group means were analyzed using Scheffé's S method (see Kirk, 1968). Group means for each story were analyzed separately and as combined scores.

The results of the post hoc analysis indicated that high ability summary writers obtained significantly higher mean scores on the retention test than did low ability summary writers ($p < .05$).

There was no difference in mean scores on any of the measures between high ability summary writers and high ability question answerers. Further, there was no difference in mean scores on any of the measures between low ability summary writers and low ability question answerers.

Finally, there was no difference in mean scores on the attitude inventories between any two groups.

DISCUSSION AND EDUCATIONAL IMPLICATIONS

There are two reasonable explanations for the finding of no facilitative effect on students' comprehension and retention for the summary writing treatment. First, the theory of discourse processing developed by Kintsch and others was based upon relatively simple stories. That is, stories that were very short, had only one major protagonist, and an uncomplicated episodic structure. However, the present study, in order to be as ecologically valid as possible, used stories typical of those found in ninth-grade English textbooks. These stories were much longer (3,000 words versus 400 words) than the stories used in developing and testing the theory. In addition, the stories used in this study contained several major characters and conflicts, and, therefore, more complicated structures. It seems reasonable to conclude that the theory of

discourse processing as developed by Kintsch and others (Kintsch, 1974, 1976, 1977; van Dijk, 1977; van Dijk & Kintsch, 1978) is unable in its present state of development to explain how more complex discourse (such as the stories ninth-grade students typically encounter in their English textbooks) is processed for comprehension and retention.

A second possible explanation for there being no effect observed in this study for the summary writing treatment is that the criterion tasks required the subjects to write short answers to questions about the stories. Such tasks may be unrelated to subjects' ability to summarize stories. That is, a facilitative effect on subjects' comprehension and retention might have been observed for the summary writing treatment if subjects had been required to write summaries of the stories as additional comprehension and retention measures.

A possible explanation for no effect being observed for the question answering treatment is that having students write answers to questions about a story might direct their post-reading attention to different aspects of the story than those asked for in the comprehension and retention tests. Such an interpretation is consistent with results obtained by numerous researchers for interspersed postquestions (Frase, 1967, 1968; Boyd, 1973; Anderson & Biddle, 1975; and LaPorte & Voss, 1975). However, interspersed postquestions also lead to generalized effects. That is, learning is also enhanced for information that is not specifically asked by the interspersed postquestions. In this study, questions were massed after the entire story and none of the items contained in the post-reading instructional activity for the question answering treatment were repeated in the comprehension or retention tests. In addition, none of the postquestions were similar enough to any of the

comprehension or retention questions to warrant an analysis for an effect for "repeated" items.

It is possible that because the postquestions were massed rather than interspersed, that subjects might have concentrated during the post-reading instructional activity on the information required to answer the treatment questions to the exclusion of other information in the story.

A further conclusion can be drawn from the findings of this study. That is, the association of a writing task (either summary writing or question answering) with a short story does not have an adverse effect upon good readers' attitudes toward the story. In addition, the association of question answering with a short story did not have an adverse effect upon poor readers' attitudes toward the story. However, the association of summary writing with a story did negatively influence poor readers' attitudes toward the story.

Based upon the results of the present study, two implications for classroom practice seem clear. First, having good and poor readers reread parts or all of a short story can enhance immediate comprehension more than having the students answer the editor-provided questions following the story in the textbook.

Second, other strategies that involve a writing task (such as summary writing or question answering) that a teacher might employ in connection with short stories do not adversely affect good readers' attitudes toward the story. Therefore, teachers need not hesitate to employ such writing assignments. However, they should recognize that their value would be for some other curriculum objective, such as writing practice, rather than as a strategy to improve good readers' comprehension and retention of the story. It is also

clear that having poor readers write a summary of a short story may adversely affect their attitudes toward the story, and therefore, such an assignment should be utilized only with the knowledge of the possible negative results on poor readers' attitudes. Question answering might be employed as a strategy with poor readers without adversely affecting their attitudes toward the story, but, again teachers should recognize that the value of the assignment would be for a different curriculum objective than improving poor readers' comprehension and retention of the story.

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